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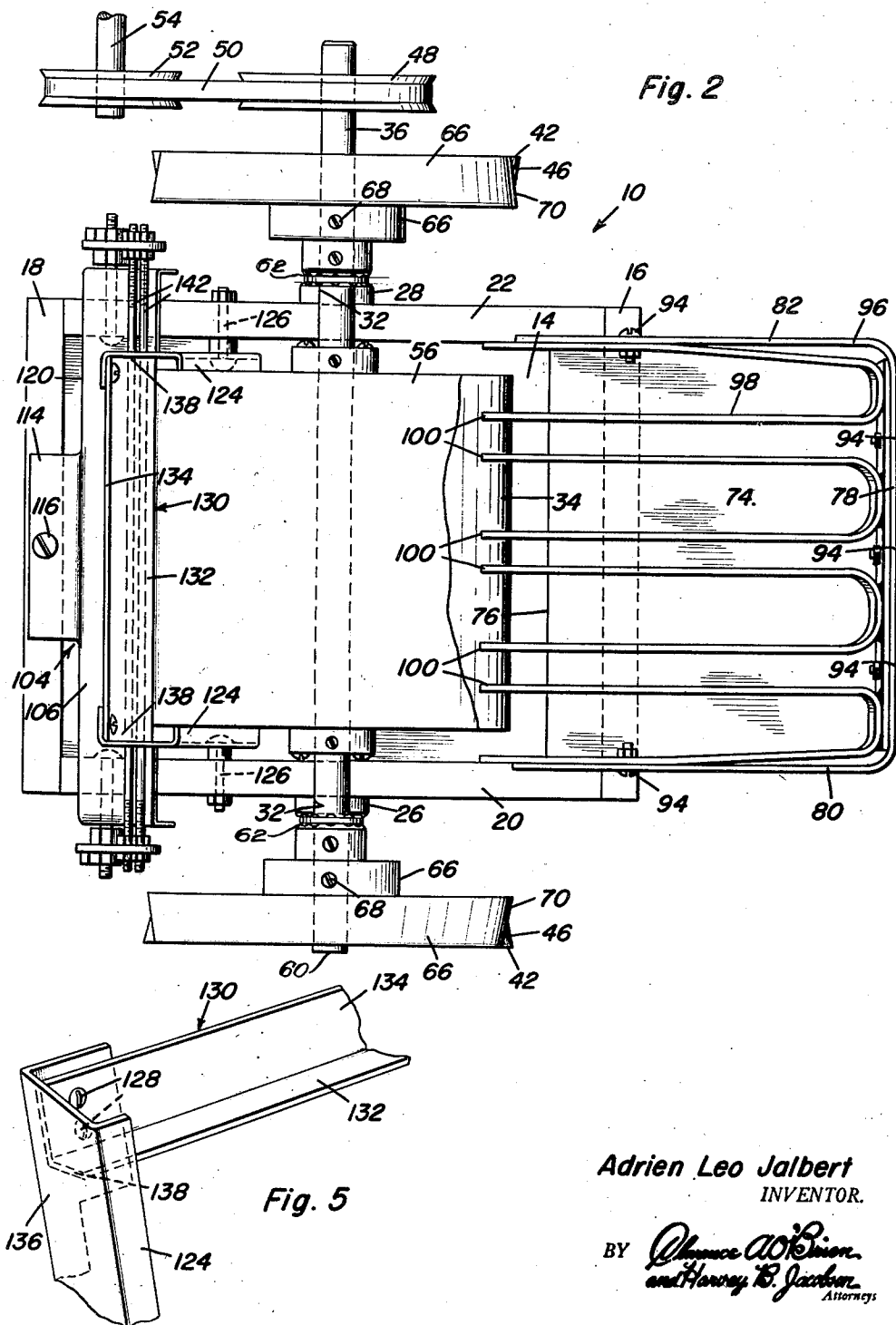
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ADHESIVE APPLYING APPARATUS

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3 Sheets-Sheet 2



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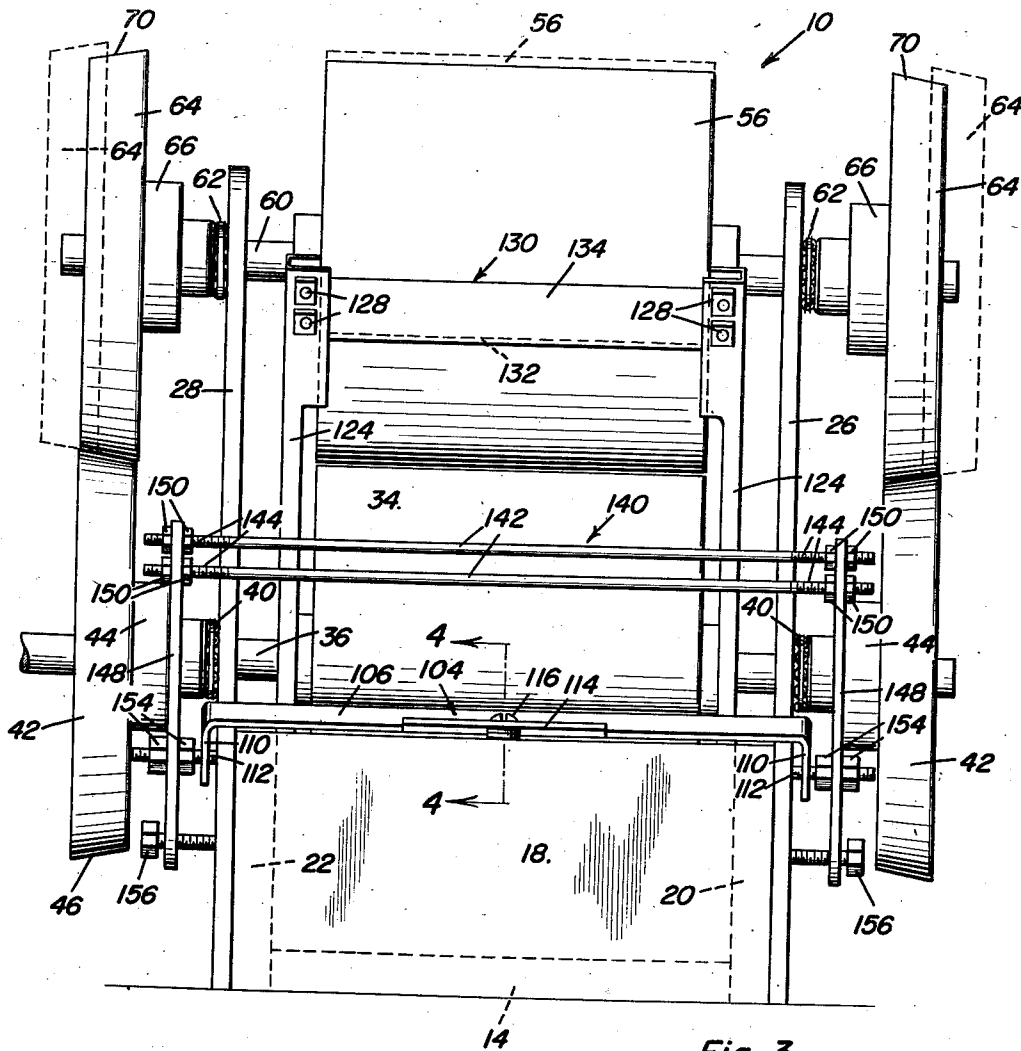


Fig. 3

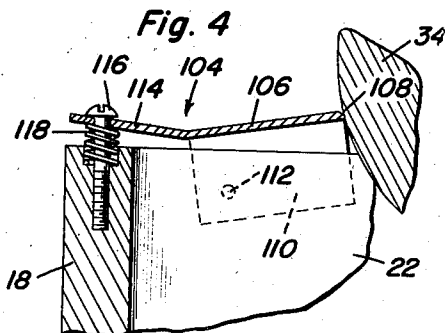


Fig. 4

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ADHESIVE APPLYING APPARATUS

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5 Claims. (Cl. 118—227)

This invention relates generally to apparatus for applying liquid adhesive material, and is more particularly concerned with a novel apparatus for applying a relatively uniform coating of liquid on one or both sides of the material being coated.

A further object of invention is conformance with that set forth above is to provide a liquid adhesive reservoir including a pair of vertically disposed liquid adhesive applying rollers, the lower of which having a portion extending within said reservoir, the upper roller being freely supported and gravity urged into contact with said lower roller for applying pressure on material passing between said rollers for applying a coat of liquid adhesive on an adjacent surface of material passing therebetween, and including means for receiving material being coated by said rollers, and means for directing access flow of liquid adhesive from said receiving means and rollers back into the reservoir as well as applying a substantially uniform coating of adhesive on the adhesive applying rollers.

A further object of the invention in conformance with that set forth above is to include in liquid adhesive applying apparatus of the character set forth including means for optionally utilizing the upper roller member for either applying pressure or a coating of adhesive on material passing between said rollers, or applying both pressure and a coating of adhesive, and including additional pressure applying means for guiding material into coating contact with the lower roller member.

A still further object of the invention is to provide a liquid adhesive applying apparatus of the character set forth which is readily and economically manufactured, usable for relatively unskilled personnel, easily installed and maintained, and highly efficient and utilitarian for the purpose intended.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation is more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the novel liquid adhesive applying apparatus with portions broken away;

Figure 2 is a top plan view of the liquid adhesive applying apparatus with a portion of the top roller member broken away for clarity;

Figure 3 is a rear elevational view of the liquid adhesive applying apparatus showing in dotted lines the relative position of the top roller member when adjusted by means of the bevel drive wheels thereof;

Figure 4 is an enlarged fragmentary sectional view taken substantially on line 4—4 of Figure 3;

Figure 5 is a fragmentary perspective view showing a portion of the adhesive equalizing and excess liquid adhesive return means cooperating with the upper roller members; and

Figure 6 is a fragmentary side elevational view on a reduced scale showing the relative position of the lower roller member with respect to line guide and pressure

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assembly for applying a coating of liquid adhesive to one side of material by using the lower roller member.

Indicated generally at 10 is the novel liquid adhesive applying apparatus which includes a lower reservoir 12 having a bottom wall portion 14, oppositely disposed front and rear wall portions 16 and 18, respectively, and side wall portions 20 and 22, the bottom, side, front and rear wall portions being suitably secured together forming an upwardly opening liquid adhesive containing reservoir or compartment, the level of which being indicated by the dotted line 24 of Figure 1.

Extending upwardly from oppositely disposed side wall portions of the reservoir 12 are a pair of elongated bars 26 and 28 which are secured to said side wall portions by means of suitable fasteners, one of which being indicated at 30, see Figures 1 and 6, the upper end of said bars including an upwardly opening slot portions 32.

A lower liquid adhesive applying roller 34 includes a transverse integral shaft portion 36 which is suitably journaled in axial aligned apertures in the straps 26 and 28 at opposite ends thereof, the shaft 36 including on the end portions extending beyond the straps 26 and 28 a circumposed thrust bearing assembly 40 of any suitable character, and having a frictional drive wheel 42 which is retained in a fixed position by means of an integral annular collar 44 which has extending therethrough a transverse setscrew engageable with the shaft 36 thus permitting relative longitudinal adjustment of the drive wheel 42, said drive wheel including a bevelled peripheral edge portion 46, see Figure 3. The shaft 36 may include on one of the outer end portions a suitable drive pulley 48 which has journaled thereover a drive belt 50 drivingly engaged by a suitable drive pulley 52 supported on a power shaft 54 connected to a suitable source of power. Although the drive for the roller member 34 is indicated as being a drive belt, it is considered with in the purview of this invention that any suitable drive means can be utilized, and accordingly drive gears, drive chains etc., may be incorporated for driving the shaft 36.

A combined liquid adhesive applying roller and pressure roller 56, a suitable heavy material for applying suitable force due to gravity on a piece of material passing between the rollers, see the arrows 58 of Figure 1, said roller 56 including an integral transverse shaft 60 freely journaled in the slots 32 of the support members 26 and 28, the shaft 60 having circumposed thereon exteriorly of the members 26 and 28 suitable thrust bearing assemblies 62 and having suitably secured thereon friction drive wheels 64 which include integral annular securing portions 66 which have extending therethrough transverse setscrews engageable with the shaft 60 for adjusting the relative longitudinal position of the drive wheel 64 with respect to the support shaft 60, the setscrews being indicated at 68. The drive wheel 64 includes a peripheral beveled edge portion 70, and as seen in Figure 3, the oppositely bevelled edge of the drive wheel 64 when adjusted longitudinally with respect to the drive wheel 42 results in vertical adjustment of the roller 56 with respect to the lower rollers 34 but permitting the upper roller to either be in peripheral rolling contact of the lower roller or to be in vertical spaced relation relative thereto. When the upper roller is in peripheral contact with the lower roller, rotation of the lower roller in the liquid adhesive in the reservoir results in coating both the upper and lower rollers, and when material is passing therebetween as seen by the arrows 58, liquid adhesive is applied to both sides of the material and the upper roller provides a sufficient pressure assuring that the material is kept relatively smooth as well as thoroughly impregnated with the liquid adhesive. When the upper roller is adjusted as seen in the dotted lines of Figure 3, no adhesive is applied on the peripheral surface thereof, however, inasmuch as

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the upper roller is freely supported in the slots 32 and the support members 26 and 28 is free to move upward when an element or member being coated on one side by the lower roller 34 is of sufficient width to raise the same, however, the upper roller is still available to apply pressure to the material passing therebetween.

A forward trough assembly 72 including rearwardly extending bottom portion 74 terminating rearwardly at 76 in overlying relationship with respect to upwardly opening liquid adhesive reservoir, the bottom member including a forward upward extending flange portion 78, and side portions 80 and 82, the trough assembly being supported by means of suitable bracket elements 84 (only one being shown) including a lower leg portion 86 suitably secured to the front wall 16 by means of suitable fastening elements 88, for example, and an upwardly angulated portion 90 supporting said trough in a rearwardly and downwardly direction, being secured to the bottom portion 74 by means of fastening elements 92. Secured by means of suitable fastening elements 94 to the upper edge portion 96 of said trough and within the confines thereof is a grill assembly 98 comprising a plurality of rearwardly opening U-shaped vertically disposed straps which have a rear end portion 100, as seen in Figure 1, and a lower arcuate portion 102 conforming to the outer periphery of the lower roller 34 and being spaced upwardly relative to the support shaft 36 thereof whereupon material being coated by the rollers 34 and 56 is received upon the grill assembly 98, excess liquid adhesive being drained through the grill assembly and back into the reservoir 12.

A liquid adhesive equalizer assembly 104 is provided for transverse engagement on the outer periphery of the lower roller 34, the equalizer assembly 104 including a transverse blade portion 106 having an angulated edge portion 108 engageable with the periphery of the roller 34, see Figure 4, the blade 106 having downwardly disposed end flange portions 110 which are pivotally supported on a suitable pivot pin 112 suitably secured on the side walls 20 and 22 of the reservoir, the blade including a rearwardly extending tab portion 114 having a suitable aperture therein overlying the rear wall 18 of the reservoir, the rear wall 18 including on the upper edge a suitable aperture into which a fastening element 116 is suitably secured, the tab portion 114 and the upper edge of the rear wall 18 having interposed therebetween a compression spring 118 circumposed on the screw element 116, said spring tending to urge the blade 106 into contact with the roller 34 by pivoting the same about the pivot support means 112. It will be noted that the blade 106 of the equalizer assembly 104 is tilted rearwardly relative to the tab portion 114 and excess liquid adhesive off the peripheral surface of the roller 34 is directed downwardly and into a reservoir 12 inasmuch as the rear edge portion 120 of the blade 106 is disposed in overlying relationship relative to said reservoir.

The liquid equalizer assembly 122 is provided for the upper roller member 56 and includes a pair of upwardly extendable pivotal channel elements 124 which are pivotally supported by suitable pivotal fastening elements 126 on the side walls 20 and 22 of the adhesive reservoir inside thereof, said channel elements 124 having a substantially U-shaped cross section, said channel members opening toward each other, see Figure 2, and having suitably secured by fastening elements 128, for example, a blade element 130 which includes a lower blade portion 132 engageable with the periphery of the upper roller 56, and a rearwardly and upwardly extending integral back portion 134, the ends of the blade 130 terminating short of the web portion 136 of the channel elements 124 wherein when the blade 132 removes excess liquid adhesive from the roller 56 the same will be urged over the ends 138 of the blade assembly and downwardly within the channel elements 124 into the reservoir 12. The equalizer assembly 130 is pivoted rearwardly on the pivot

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elements 126 when the upper roller 56 is not being utilized for applying liquid adhesive on the upper surface of a member upon which a coating thereof is being applied.

For the purpose of applying a liquid adhesive to one side of a box toe portion for shoes and utilizing the lower adhesive roller 34, there is provided an adjustable combined guiding and pressure assembly 140 which may be utilized with the upper roller member 56 being adjusted by means of the bevel friction wheels so that it does not contact the lower roller member 34, and the assembly 140 may be pivoted rearwardly and out-of-the-way when material is being coated on both sides. The assembly 140 includes a pair of spaced rod elements 142 which include threaded end portions 144 received within elongated slots 146, see Figure 1, of a support arm member 148 by means of nut elements 150 secured on the threaded portions 144 on opposite sides of the arm elements 148 whereby the rod elements may be adjusted toward or away from each other, it being understood that in certain cases the single rod may be utilized, and as seen in Figure 6, the arrows 152 indicate the relative path of movement of a box toe being coated with cement on one side whereupon the same is inserted beneath the rods 142 in engagement with the outer periphery of the roller 34 and is ultimately received upon the grill assembly 98 as previously described relative to other material being coated. The arm members 148 are pivotally supported on the pivot member 112 which also supports the lower adhesive equalizer assembly 104, by means of spaced nut elements 154 secured on opposite sides of the arm member 148, see Figure 3, said arm member including a suitable aperture pivot portion freely journaled on the element 112, the lower end portions of the arm members having extending therethrough stop screws 156 which are engageable with the outer side wall portion of the reservoir and which serve to retain the assembly 140 in a relatively fixed position with respect to the periphery of the lower roller 34.

In view of the preceding description, it is readily apparent that the liquid adhesive applying apparatus may be utilized for applying a coat of liquid adhesive readily and efficiently to either one or both sides of material extending therethrough by means of the cooperation of the roller members 34 and 56, taken together or by utilizing the lower roller member for applying the liquid adhesive in the upper roller member being fully supported in the slots 32 merely applying pressure, or the lower roller 34 may cooperate with the assembly 40 for applying the coat of liquid adhesive on a box toe of a shoe, for example, or any other similar material.

Various positional directional terms such as "front," "rear," "top," etc., are utilized herein to have only a relative connotation to aid in describing the device and are not intended to require any particular orientation with respect to any external elements.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. Adhesive applying apparatus comprising an upwardly opening liquid adhesive reservoir including side, front and rear wall portions, support elements extending upwardly from opposite guide wall portions of said reservoir, and an adhesive roller member extending into the reservoir between the side wall portions thereof, said roller member including a transverse support shaft including opposite end portions journaled in the support elements, one of the end portions of said shaft including means connectable to a rotary power source, a trough member secured

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on an upper forward edge portion of the reservoir and including a rear edge portion extending in overlying relationship to said reservoir, a grill element secured in overlying relationship to said trough member, and having end portions thereof spaced adjacent the periphery of said roller member above the transverse shaft thereof, for receiving material being coated with adhesive thereon, the upwardly extending support elements including upwardly opening slot portions, a removably gravity urged adhesive applying pressure roller including a transverse support shaft journaled in the slot portions of said support elements and freely reciprocable therein, said pressure roller being peripherally engageable with said adhesive roller, the transverse shafts of each of said rollers including on opposite end portions friction drive wheel members each including mutually engageable oppositely beveled peripheral edge portions, the drive wheel members on one of said shafts including means for adjusting the relative longitudinal engagement of said drive wheels defining the peripheral spacing between the rollers, and liquid adhesive equalizer means supported on said reservoir and engageable along the length of said roller members for distributing a coating of adhesive uniformly on said rollers.

2. Adhesive applying apparatus as set forth in claim 1 wherein said adhesive equalizer means comprises a pair of fixed transverse plate elements engageable along the length of the peripheral surface of said rollers during rotation thereof, each of said blade elements being pivotally supported on axially aligned pivot portions of the side walls of said reservoir, each of said blades including means for directing surplus liquid adhesive into the reservoir.

3. Adhesive applying apparatus as set forth in claim 2 wherein the blade element engageable with the lower roller member includes a rearwardly disposed tab portion extending over a rear edge portion of the rear wall of said reservoir, a resilient member interposed between said

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rear wall portion and said tab portion for urging the blade element toward said roller, the upper blade element being pivotally secured to the side walls of said reservoir by means of an elongated upwardly extending channel elements opening toward each other and pivoted inside said reservoir, the blade element for the upper roller member including a lower substantially horizontal roller engaging portion in an integral rear wall portion, the opposite ends of the blade member terminating inwardly of the channel portion of said channel elements for directing surplus liquid adhesive into said reservoir.

4. Adhesive applying apparatus as set forth in claim 1 including a material guide and pressure applying assembly for applying adhesive to one side of the material being coated, said assembly including a rod portion extending in spaced transverse relationship to a peripheral portion of the lower roller adjacent the rear thereof for permitting material to be guided therebetween, said rod portion being secured in opposite end portions of a pair of support arms, said support arms being pivotally secured on opposite side portions of said reservoir, and securing means on said arm elements engageable with the side walls of said reservoir retaining the guide assembly in a relatively fixed position in relation to the outer periphery of said lower roller.

5. Adhesive applying apparatus as set forth in claim 4 wherein said rod portion includes a pair of spaced rod members, and means on said arm members engageable with said rod members for adjusting and retaining a fixed spaced relation between said rod members.

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